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December 2, 1966

STAT [redacted]
Post Office Box 6788
Fort Davis Station
Washington, D. C. 20020

Attention: Bill K
Subject: Transmittal of Documents
STAT Reference: [redacted]

Gentlemen:

In accordance with our requirements on the above contract,
STAT [redacted] herein submits five copies of our Sixth Monthly Progress Report for the design and fabrication of a variable anamorphic viewing system.

If you have any questions concerning this project, please contact the writer directly.

Very truly yours,

[redacted] STAT

STAT [redacted]
Encs.

Contracts Section

cc: Ed D.

Declass Review by NGA.

Sixth Progress Report

DESIGN AND FABRICATION OF VARIABLE ANAMORPHIC VIEWING SYSTEM

December 1, 1966

Approved For Release 2004/11/30 : CIA-RDP78B04770A000400020038-6

1.0 SUMMARY

The primary effort during this period has been manufacture of optical and mechanical components. The small size of these parts has presented some problems. Most of these were easily solved. However, the manufacture of the small prisms for the anamorphic system presented a more difficult problem.

2.0 OPTICS MANUFACTURE

It was pointed out in the fourth progress report that it was anticipated that these prisms might present a problem and the optics manufacutring people had been alerted to this fact. At the time they devised a method of manufacture that made use of an auxiliary piece of glass precision ground and polished to the prism angle. One face of the prism was optically contacted to this polished face.

This assembly was then large enough that the second side of the prism could be polished. This technique had been previously, and successfully used. When tried in the present case it was discovered that the prism was so small that the area of optical contact did not provide enough holding force to withstand the forces of the polishing lap. As a consequence, during the polishing process, the prisms came off the auxiliary piece of glass. Thus it was necessary to modify the technique.

Greater holding force could be obtained by cementing the prism to the auxiliary piece of glass. In doing this, however, it was essential that the reference surface of the auxiliary piece of glass and the mating surface of the prism be parallel. Otherwise the reference for the prism angle would be lost during polishing. Also, of course, any cement used must be easily separable after the prism

was polished. Thus it was necessary to take time to develop a method of cementing that assured parallelism of the mating faces, and to confirm, by polishing experimental pieces, that it worked satisfactorily. Such a technique was successfully developed using wax as the adhesive. Once this problem had been solved manufacture of the prisms proceeded satisfactorily.

A brief investigation was made to determine why this problem was not anticipated before manufacturing started. It was found that the optical contact method had been successfully used many times in the past. Previously manufactured parts had been larger than the prisms although in some cases not much larger. Thus it was deduced that use of this technique is critically dependent on the area of contact, and the anamorphic prisms were smaller than this critical area.

2.1 PARTS MANUFACTURE

During the manufacture of optical components all mechanical parts were completed. These parts have been assembled to assure smooth operation.

3.0 FUTURE WORK

The only remaining work is assembly of the optical components in the mechanical parts. This is now being done, and should be completed in about a week. Some optical alignment will be necessary after this assembly. This is presently scheduled to be completed by December 19 at which time the two eyepieces will be ready for delivery.

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